


Europäisches Patentamt
European Patent Office
Office européen des brevets

⑪ Publication number:

0 177 821
A1

⑫

EUROPEAN PATENT APPLICATION

⑪ Application number: 85112002.2

⑤① Int. Cl.⁴: **G 02 C 5/22**

⑫ Date of filing: 22.09.85

③① Priority: 25.09.84 IT 3085384 U

⑦① Applicant: **VISOTTICA S.p.A., Via Vecchia Trevigiana, 11, I-31058 Susegana (Province of Treviso) (IT)**

④③ Date of publication of application: 16.04.86
Bulletin 86/16

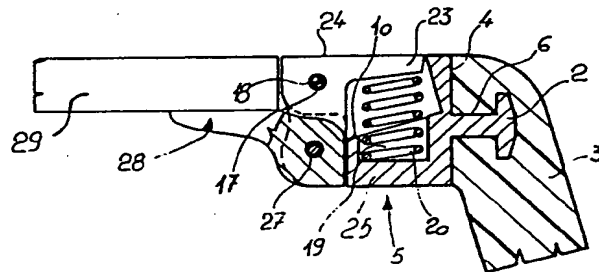
⑦② Inventor: **Montalban, Rinaldo, Via XX Settembre, 75, I-31015 Conegliano (Treviso) (IT)**

⑥④ Designated Contracting States: **AT CH DE FR LI**

⑦④ Representative: **Modiano, Guido et al, MODIANO, JOSIF, PISANTY & STAUB Modiano & Associati Via Meravigli, 16, I-20123 Milan (IT)**

⑤④ Hinge device particularly for eyeglasses.

⑤⑦ The hinge device comprises a box-like body (5) associable with the front of eyeglasses (3). The body (5) has two shoulders protruding therefrom and a seat (19) for a spring (20). A flange (23) of an L-like element is hingedly connected to the body (5) between the shoulders and adjacent the spring (20), another flange (25) of the L-like element (21) being connectable to a leg (29) of eyeglasses through a connection member (28). The device also includes an element (2) for connecting the body (5) to an eyeglasses front (1).



"HINGE DEVICE PARTICULARLY FOR EYEGLASSES"

This invention relates to a hinge device particularly for eyeglasses, associable with the front of eyeglasses.

5 Currently known are various types of elastic hinges for eyeglasses; some usually comprise a spring acting on a small plunger, others combine a ball with the spring which cooperates with a metal cam; the common object is to afford extra opening the legs, with respect to the front of eyeglasses, extra opening being defined herein
10 as opening in excess of an opening angle of approximately 90° defined between the front and the legs, as usually employed.

Such hinges have various drawbacks, such as wear of the contacting parts, which is only partially reduced
15 by using very hard materials and their constructional complexity.

It is the primary aim of this invention to obviate such prior drawbacks of known types of hinge devices for eyeglasses by providing a hinge device particularly for
20 eyeglasses which allows extra opening of the leg past their usual position of use.

A further important object is to provide a hinge device particularly for eyeglasses which combines with the preceding feature that of providing a position of
25 stable equilibrium for the legs relatively to the front in the condition of non-use.

Another object is to provide a hinge device composed of parts subjected to little wear.

Another object is to provide a hinge device particu-

larly for eyeglasses which allows extra opening of the legs with respect to the front without altering the aesthetic and mechanical characteristics of the leg and front.

5 An important object is to provide a hinge device particularly for eyeglasses which automatically returns the leg to the normal position once extra opening is no longer required.

10 A not least object is to provide hinge with optimum characteristics and of reduced cost.

 These and other objects are achieved by a hinge device particularly for eyeglasses characterized in that it comprises a box-like body, associable with the front of eyeglasses, having two shoulders protruding therefrom, and including a first seat for an elastic means, to said body there being hinged an essentially L-shaped element, a flange of the L-shaped element being associable with the leg of eyeglasses, another flange thereof being located between the two shoulders above the elastic means, said elastic means being located off-centered and perpendicular with respect to the pivot axis of the body, said device also includes means for connecting the eyeglasses leg to one flange of the L-like element.

15

20

25 Further features and advantages will become apparent from the description of a preferred embodiment of the hinge device particularly for eyeglasses, as shown by way of illustration in the accompanying drawings, where:
Figure 1 is a first three-quarter perspective view;

Figure 2 is a partly sectional view taken on the section plane II-II of Figure 1 showing the hinge device in a position of normal use;

5 Figure 3 is a partly sectional view similar to the view of Figure 2, but showing the hinge device in an extra opened condition;

10 Figure 4 is a partially sectional view similar to the view of Figure 3 showing the position of unstable equilibrium preceding snap return of the leg from an extra opened position to a position of normal use;

Figure 5 is a partly sectional view showing a variation of the hinge device particularly for metal eyeglasses frames;

15 Figure 6 is a sectional view taken on the plane VI-VI of Figure 5;

Figure 7 is a partly sectional view of the device of Figure 5; and

Figure 8 is a perspective view of a moulding of the variation of the hinge device illustrated in Figure 5.

20 With reference to the previously cited figures, the hinge device for eyeglasses 1 comprises a metal structure composed of a T-shaped moulding 2 associable with a front 3 and rigid with the rear wall 4 of a box-like body 5 through a shank 6 extending perpendicularly
25 with respect to the wall itself.

The box-like body 5 is advantageously of metal construction, has a parallelepipedal shape and, at a rear region 7 thereof, there is formed a recessed step 8 having a height substantially corresponding to one half of a
30 height dimension defined by the body itself.

At the top of the body 5 there is formed, along the longitudinal mid-axis of the same, a milling 9 performed on an inclined plane 10 (Figure 4), that milling partially spanning, both in length and width, the top wall 11 of the body 5 and approximately one half the height of the step 8.

Thus, there are defined two side shoulders 12 and 13 of substantially parallelepipedal shape and advantageously having a lateral extension corresponding to about one fifth of a lateral extension defined by the wall 11, which is expediently radiused to the step 9 by two bevels 14 and 15 defining an S-shaped connection region.

Close to the top corner edge 16 of each of the two shoulders 12, 13 there is formed, on a common axis, a through hole 17 with which a screw 18 is associated.

A cylindrical seat 19, perpendicular with respect to the wall 11, is finally formed on the plane 10 of the body 5, there being housed therein an elastic biasing means such as a cylindrical coil compression spring 20.

The element 21 of essentially L-like shape is placed to cover the box-like body 5 and hinged to the shoulders 12 and 13 by means of screw thread engagement of the screw 18, there being formed a through hole 22 therein in correspondence with the through hole 17.

The flange 23 of the element 21, which is so sized as to fit in between the shoulders 12 and 13, rests internally on the spring 20 whilst its outer face 24 is adapted to lie at rest on level with the wall 11.

The other flange 25 rests internally at rest and

at its end on the step 8, formed on it is also a through hole 26, off-centered relatively to the hole 17, with which there engages in thread engagement relationship a fastening screw 27 for hingedly connecting to the L-like element 21 a connection means 28, shaped to match the front region of the hinge and associated with the leg 29.

The connection means 28 has two lugs 30, parallel to each other and associated with the flange 25, protruding from the front itself, there being formed axially aligned holes 31 therein for screw thread engagement with the screw 27.

The shape of the lugs 30 is essentially parallelepipedal, having a bevelled corner edge 32a and a sharp one 32b.

The hinge device 1 is assembled as follows:

after inserting the spring 22 into the seat 21 the element 23 is positioned with the flange 25 between the shoulders 14 and 15 of the body 5 hingedly connecting it to the same by means of the screw 20 inserted in the through holes 17 of the shoulders 12,13 and the through hole 22 of the L-like element 21. Obviously, the threadable zone of the screw or any portion thereof may be threaded depending on which of the holes 17,22 are threaded to engage therewith. The element 23 is to be hinged in turn, by means of the screw 27, inserted into the through holes 31 of the lugs 30 and the through hole 26 formed in the flange 25 of the L-like element 21, to the matingly shaped connection means 30 present on the front 3 of the eyeglasses, whilst the leg 29 is associated

with the rear wall 4 of the box-like body 5 through the T-shaped moulding 2 adapted to be embedded in the same. Obviously this moulding may define any suitable configuration for embedding purposes and any suitable threading arrangement may be provided between the screw 27 and one or more of the through holes 26,31.

Operation is as follows:

Figure 2 shows the normal in-use position, that is with the leg 29 disposed at about 90° with respect to the front 3, the step 8 preventing the spring 20 from being stressed.

Figure 3 shows the condition of extra opening, where it may be seen that as the angle between the leg and front increases, the flange 23 of the element 21 associated with the connection means 28 compresses the spring 20 owing to the interaction of the leg and corner edge 16. Thus, the rotation is allowed, about the axis of the screw 18, of the leg past the position of normal use (i.e. to a position of extra opening), the spring tending subsequently to return the leg to the condition shown in Figure 2.

In Figure 4 there is shown instead a phase immediately preceding the snap closure of the leg 29 which brings the latter to arrange itself substantially parallel to the front 3, to a position of non-use of the eye-glasses.

Where in fact the angle of about 90° is reduced which is defined between the leg 29 and front 3, the sharp corner edge 32b of the lugs 30 interacts with the step 8 causing the element 21 to turn about the axis of the screw 18 and the simultaneous compression of the spring 20.

Thus one passes from a position of stable equilibrium (90° angle) to one of unstable equilibrium (angle of less than 90°).

5 On further decreasing the angle (i.e. rotating the leg 29 further) the edge 32b of the lug 30 will move past the end of the step 8, thereby enabling the leg to be arranged substantially parallel to the front 3.

10 In Figures 5,6,7 and 8 there is shown a variation of the moulding 102 associated with a front or frame 103, the hinge 101 remaining unaltered in all its other parts. That variation finds application particularly with metal eyeglasses frames.

15 In that case, in fact, with the front 103, having an open structure with a V-shaped seat 133 for the insertion of the lens 134, there are made rigid two half-tubes 135 and 136, associated with each other through a screw 137 inserted into a matingly shaped seat 138 formed therein.

20 The moulding 102 is correspondingly shaped to mate with the two half-tubes 135 and 136, its outer structure completely enclosing them together with that portion of the front which is fastened to them; it has, therefore, two seats 139 and 140 divided, however, by a flat sector 141 on which there are formed a V-like recess
25 having the same dimensions as the seat 133 and a hole 142 at the seat 138.

That sector 141 is interposed to the two half-tubes 135 and 136 and associated therewith through the screw 137 passed through the half-tube 135, the hole 142

in the sector 141 and expediently threadedly engaging with the seat 138. Either of both of the half-tubes and/or the hole 142 may be threaded for screw thread engagement with the screw 137.

5 All of the other component elements of the hinge device 101 being unchanged, its operation is the same.

The advantages of that hinge are associated, therefore, with the simplicity of effectuation of the extra opening, without this resulting in mechanical
10 deformations of the front and legs, and with the automatic restoration of the same to the normal position.

The snap closure also allows the leg to be positioned relatively to the front in a condition of stable equilibrium.

15 The wall 4 of the body 5 finally permits the seat for the spring to be kept isolated in the condition of stable equilibrium, preventing the infiltration of dirt and plastics where the leg is embedded in the base 2.

The moulding 102 further enables the hinge device
20 to be used with metal frames, increasing its application to all known types of eyeglasses frame structures.

Of course, the materials used and the dimensions may be any ones, depending on requirements.

CLAIMS

1 1. A hinge device particularly for eyeglasses
2 characterized in that it comprises a box-like body (5)
3 associable with the front (3,103) of eyeglasses and
4 having two shoulders (12,13) protruding therefrom, and
5 including a first seat (19) for an elastic means (20),
6 to said body (5) there being hinged an essentially L-
7 shaped element (21), a flange (25) of the L-shaped
8 element being associable with the leg (29) of eyeglasses,
9 another flange (23) thereof being located between the
10 two shoulders (12,13) above the elastic means (20), said
11 elastic means (20) being located off-centered and per-
12 pendicular with respect to the pivot axis of the body
13 (5), said device also including means (28) for connecting
14 the eyeglasses leg (29) to one flange (25) of the L-like
15 element (21).

1 2. A hinge device according to Claim 1, characterized
2 in that it has a T-shaped moulding (2) associable with
3 the front (3) of eyeglasses and the shank (6) whereof is
4 associated perpendicularly with a wall (4) of said box-
5 like body (5), said body (5) defining a height dimension
6 and having a recessed step (8), defining a height dimen-
7 sion corresponding to approximately one half of the
8 height dimension of the box-like body, and being lo-
9 cated at the bottom and on the opposed side of the same
10 with respect to the moulding (2), at the top of said
11 body (5) there being formed, along the longitudinal mid-
12 axis thereof, a milling (9) performed on an inclined
13 plane (10) and spanning partially the thickness of the
14 body (5) to about one half of the height dimension of

15 the step (8), said milling (9) defining two parallele-
16 pipedal shoulders (12,13) protruding longitudinally,
17 extending from the upper portion of the body (5) and
18 being radiused at the bottom to the step (8), on each
19 of said shoulders (12,13) at a mutual axis there being
20 formed a through hole (17).

1 3. A hinge device according to Claim 1 or 2, charac-
2 terized in that it has, between the shoulders (12,13),
3 a cylindrical seat (19) for an elastic means (20) having
4 the longitudinal axis perpendicular to the shank of the
5 moulding (9), said seat (19) being formed on the base of
6 the inclined plane (10) formed by said milling (9).

1 4. A hinge device according to Claims 1,2 and 3, char-
2 acterized in that the L-shaped element (21) is placed on
3 the box-like body (5) with a first flange (23) located
4 between the side shoulders (12,13), the inner surface
5 of the end of the first and second flange (23,25) rest-
6 ing, respectively, on the elastic means (20) and the
7 step (8), said L-like element (21) having, moreover, two
8 through holes (22,26) each having a longitudinal axis
9 extending perpendicular to the axis of the cylindrical
10 seat (19), said holes (22,26) being formed in alignment
11 with the hole (17) formed on the shoulders (12,13), and
12 the other being formed close to the end of the second
13 flange (25).

1 5. A hinge device according to the preceding claims,
2 comprising a means of connection (28) between the eye-
3 glasses leg (29) and the hinge, characterized in that it
4 has a lug (30) pivoted to the end of the second flange
5 (25) of the L-shaped element (21), said lug (30) having a

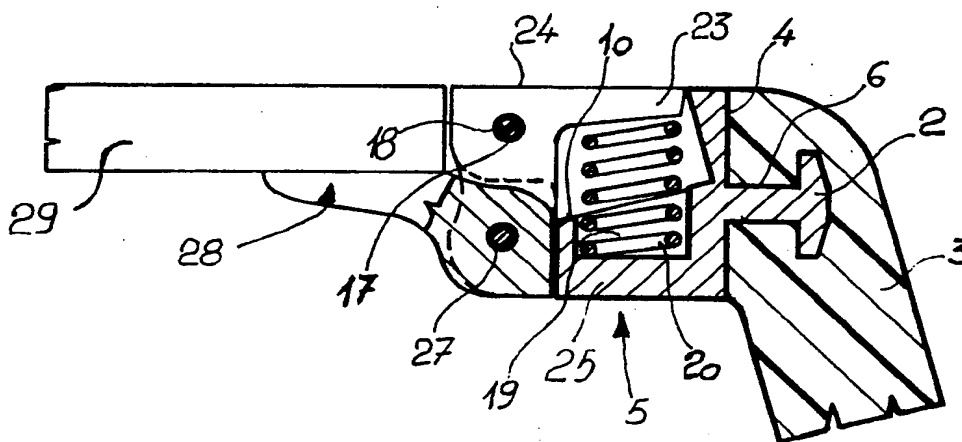
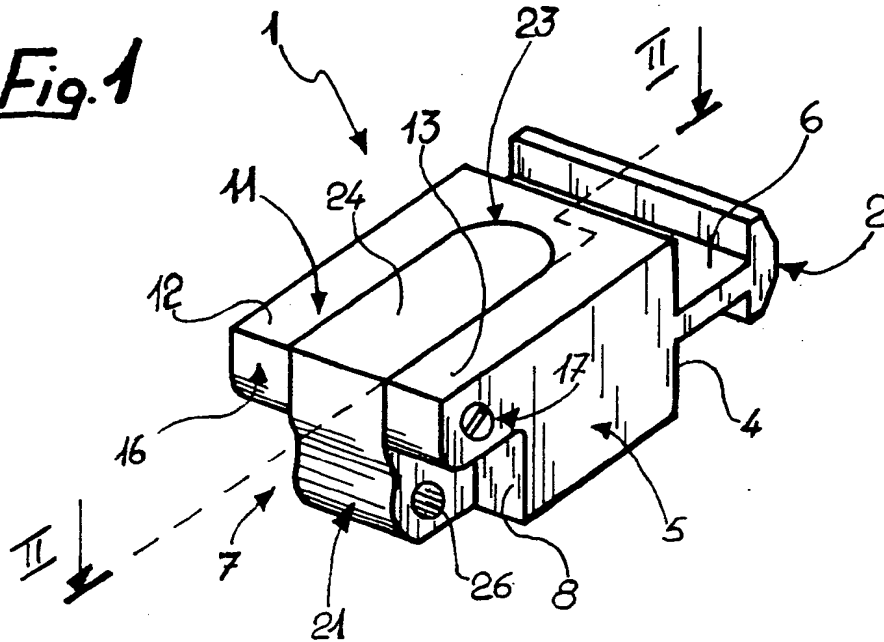
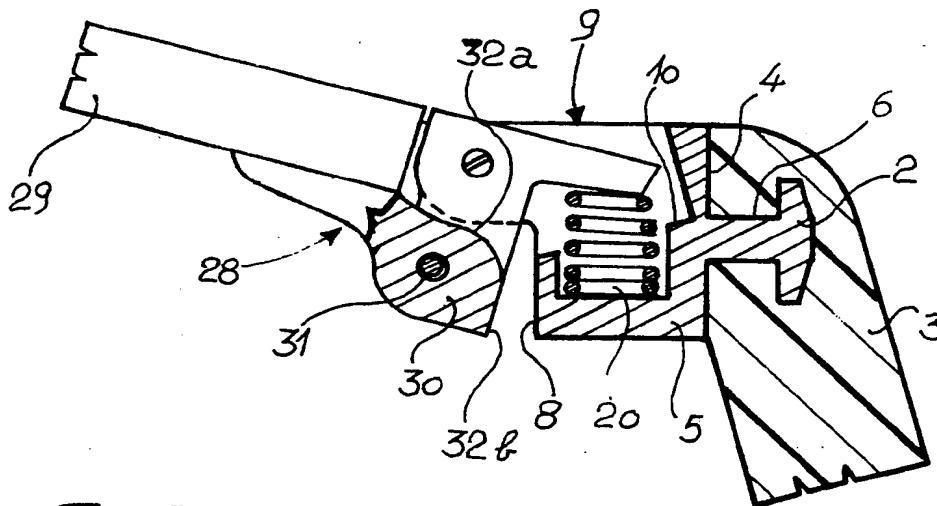
6 bevelled corner edge (32a) and a sharp one (32b), the
7 latter cooperating with the surface of the step (8) of
8 the box-like body (5) adjacent thereto during the clo-
9 sure phase.

1 6. A hinge device according to Claim 2, charac-
2 terized in that the inclination of the milling (9) per-
3 formed on the body (5) is such as to define an angle
4 greater than 180° with respect to the longitudinal axis
5 of the moulding (2) shank (3), said milling (9) not
6 spanning the full thickness of the wall (4) with which
7 the moulding (2) shank (3) is rigid.

1 7. A hinge device according to one or more of the
2 previous claims, characterized in that it has, in a
3 variation, a matingly shaped moulding (102) associable
4 with the half-tubes (135,136) of a frame (103), said
5 moulding (102) having for the same a seat (133) on which
6 there is located, about midway of its longitudinal exten-
7 sion, a flat cross sector (141) defining two separate
8 seats (139,140) one for each half-tube (135,136).

1 8. A hinge device according to Claims 1 and 7,
2 characterized in that said flat sector (141) is interposed
3 to the facing surfaces of the two half-tubes (135,136),
4 there being formed a hole (142) therein extending co-
5 axial to the half-tubes (135,136), for fastening the
6 same by means of a screw (137), on said sector (141) there
7 being also formed a matingly shaped seat (140) for the
8 area of the peripheral edge of the lens.

1 9. A hinge device according to Claims 1 and 3,
2 characterized in that the elastic means comprises a
3 cylindrical coil compression spring (20).

Fig. 1*Fig. 2**Fig. 3*

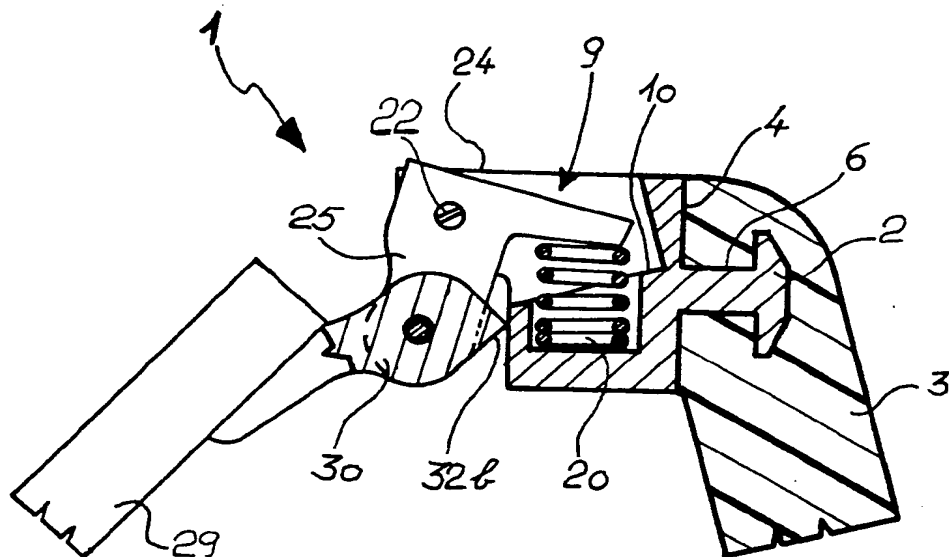
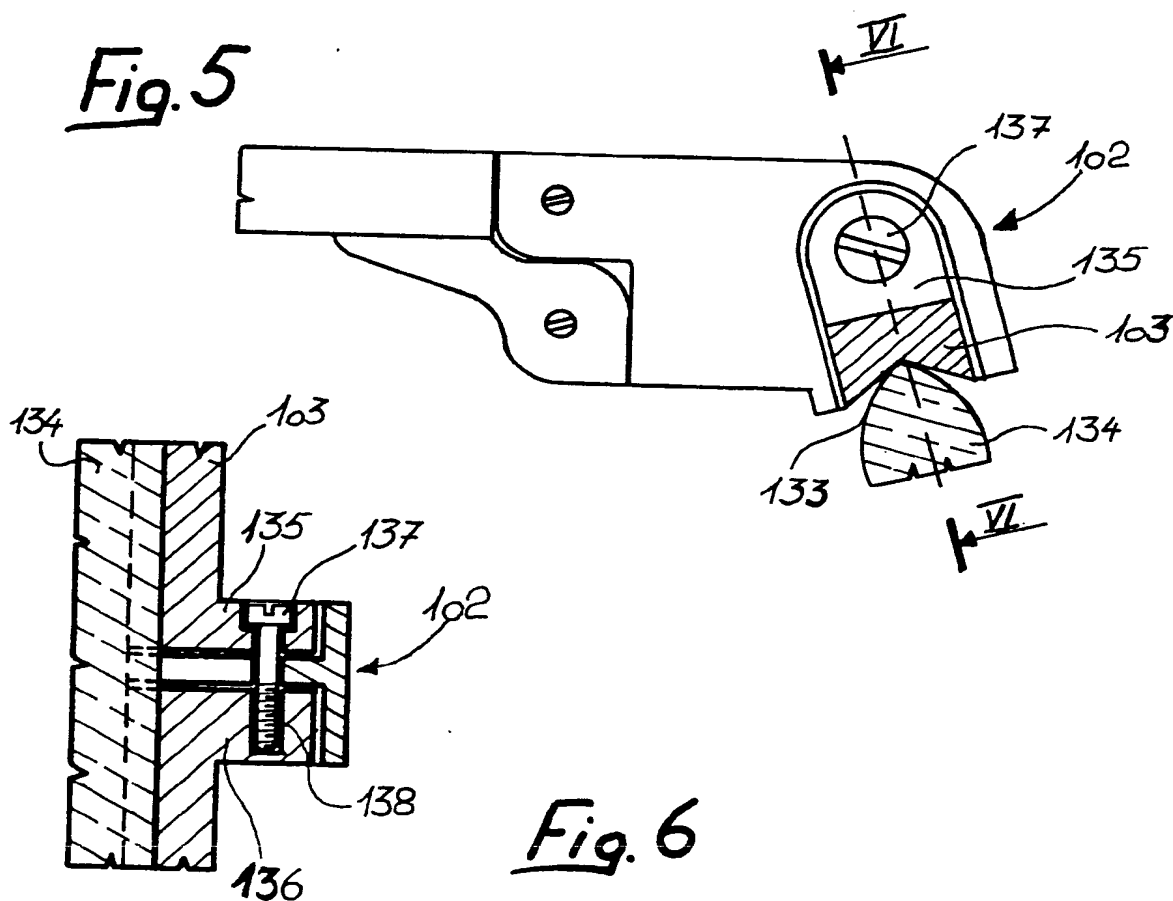
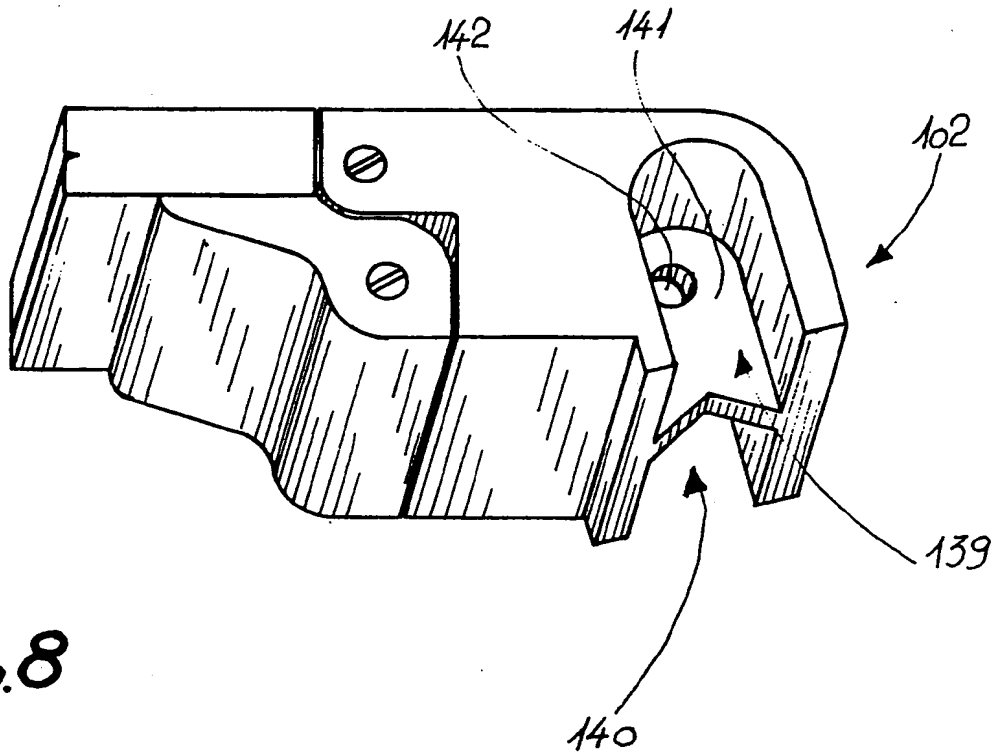
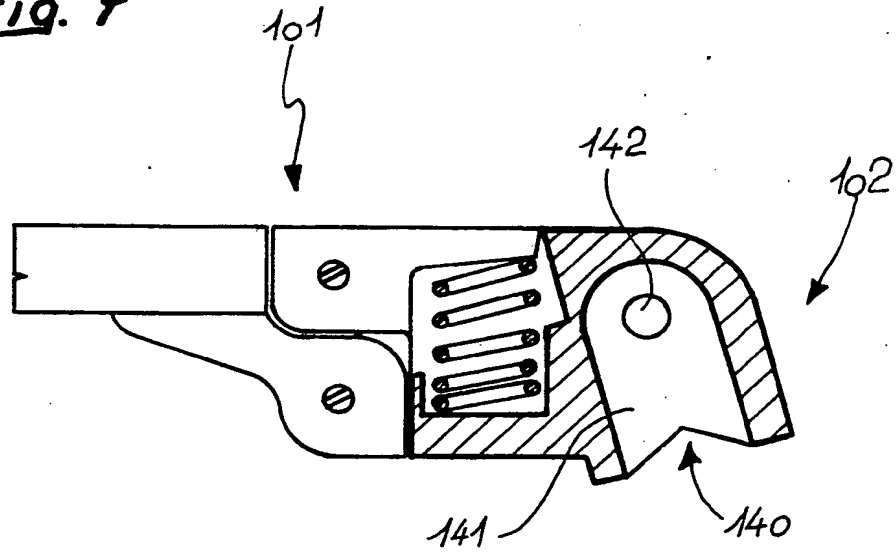
*Fig. 4**Fig. 5**Fig. 6*

Fig. 7*Fig. 8*



European Patent
Office

EUROPEAN SEARCH REPORT

0177821

Application number

EP 85 11 2002

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
Y	US-A-4 269 488 (A. ZANCANER) * Figures 1,2; columns 1,2 *	1	G 02 C 5/22
Y	FR-A-2 043 881 (H. LEVRIER et al.) * Figure 6; page 3, lines 30-40; page 4 *	1	
A	FR-A-2 114 282 (P. GOTTLIEB-HERTZ) * Whole document *	1	
A	FR-A-2 097 211 (R. GIROD) * Whole document *	1	
A	US-A-3 644 023 (L. VILLANI) * Whole document *	1	TECHNICAL FIELDS SEARCHED (Int. Cl.4)
			G 02 C 5/22
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 07-02-1986	Examiner CALLEWAERT-HAEZEBROU
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

EPO Form 1503 03 82